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AUTHOR Liu, Richard; Liu, Elizabeth
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ABSTRACT

This study examined the impact of social and academic integration on college students' satisfaction and retention in the theoretical context of Tinto. A sample of 378 freshmen from a comprehensive state university responded to a survey. Variables examined included persistence, satisfaction, academic integration, social integration, academic performance, and demographics. Surveys were later matched with students' transcripts and academic records to determine academic status. Data analysis indicated that neither gender, ethnicity, nor age related to student satisfaction. Academic integration, social integration, and academic performance all had positive influences on student satisfaction (with social integration being the most influential factor). Gender, age, and ethnicity also had no impact on student retention, while academic integration, academic performance, and student satisfaction all influenced student retention. Social integration was not significant in students' decisions to stay. Overall, the study partially validated Tinto's theory. Policy implications are discussed. (Contains 39 references.) (SM)

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Institutional Integration: An Analysis of Tinto's Theory

by

Richard Liu
University of Minnesota-Duluth

and

Elizabeth Liu
Harvard Law School

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Please direct all correspondence to Dr. Richard Liu, Institutional Studies, University of Minnesota-Duluth, 420 Darland Administration, Duluth, MN 55812-2496.

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Abstract

This study examines the impact of social and academic integration on student satisfaction and retention at a comprehensive state university. A sample of 378 freshmen was selected to respond to the survey. The variables included in the study were academic performance, demographics, student satisfaction and retention. A probit model was built and tested to determine the effects of variables upon retention. Policy implications have been provided for further exploration.

Institutional Integration: An Analysis of Tinto's Theory

Introduction

Merges between disciplines, which have been popularized recently, appear in many theories of higher education related to student departure. Models such as those presented by Waterman and Waterman (1972), Hannah (1971), and Johnson (1987) emphasize the role individual disposition and personal satisfaction have in influencing student persistence. In this psychological context, student departure is defined as a problem of psychological maladjustment.

In contrast to the psychological model, sociological explanations for student departure are presented in broader terms. Pincus (1980) argued that student departure must be understood not as an isolated individual instance, but as part of the larger process of social stratification, in which race and sex are determining factors. Effective learning requires that an individual successfully interacts with and responds to his/her environment. Student satisfaction with the environment has long been established as a key intervening factor in influencing student academic performance (Aitken, 1982). As might be expected, academic performance also directly affects a student's retention decision to complete his degree. (Bean, 1979; 1981; Johnson 1987). In a much broader context, Tinto expounded the concept of solidarity by Durkheim. Specifically, Tinto incorporated the concept of student integration into his model of student persistence and departure. Thus our understanding of student persistence has greatly increased by cross-referencing approaches from both perspectives.

The importance of studying persistence in terms of sociological and psychological models is not limited to theoretical interest but also has practical implications. When the federal government requires an institution of higher education to report its retention statistics on the IPED, the message for greater accountability of institutions of higher education is vividly clear. Educational administration has to provide accurate, current facts illustrating student satisfaction with various aspects of educational programs offered and the relationship between student satisfaction and student persistence. The purpose of this study is to investigate the effects of satisfaction upon the retention of students in the theoretical context of Tinto.

Theoretical Model

Pervin and Rubin (1967) indicated that student satisfaction is highly related to student retention, and key to academic withdrawal. Morstain (1977) advanced the idea that satisfaction precedes performance. Students satisfied with the academic environment tend to have higher mean scores on achievement tests. Achievement measured by grade point average was found significantly related to student satisfaction (Beelick, 1973). College grades were found to be positively associated with satisfaction. The higher a student's college grades, the lower the odds of the student finding the courses harder than expected. The higher a student's college grades, the greater the odds of the student reporting that courses were interesting, that he or she performed well, learned a lot, and met interesting people (Knox, Lindsay and Kolb 1992). Similar findings stated that the

perceived quality of life is a major factor in influencing persistence (Aitken, 1982; Higgerson, 1985).

Satisfaction and integration are two distinct yet related concepts. Integration into college life is defined as satisfaction in Anderson's work (1981). The weighted scale of satisfaction measures integration with the ability, knowledge and personal qualities of the instructors, the social life, development of work skills and intellectual growth. Although no significant study has followed Anderson's study of attrition, the literature of sociology has generally linked satisfaction and integration as joint forces in determining retention. The theory holds that a student's tendency to withdraw from college is inversely related to the degree of direct involvement in the academic and social life of the institution (Astin 1975). Deriving its strength from Durkheim's conception of solidarity, Tinto (1987) advanced this concept by incorporating social and intellectual integration into his theory of retention. Solidarity is a collective and social phenomenon, which plays a pivotal role in integration and imposes both ideas and values upon students. The importance of academic integration to academic performance is also observed in Pascarella and Terenzinis' study (Pascarella and Terenzini 1983). The index of satisfaction with academic experience is constructed as an endogenous variable of academic integration (Cabrera, Nora, and Castaneda 1993). Thus, it is believed that the commonality between integration and satisfaction is crucial to the success of academic performance and persistence. The concept of integration becomes an approximation of student satisfaction.

Procedures

The sample was drawn from the fall 1997 entering freshman class of 1606 students at a comprehensive state university. Satisfaction data was collected through a survey questionnaire. The survey was sent to students during the spring term and were later matched with students' transcripts and academic records to determine his/her academic status.

The initial survey and follow-up survey yielded 378 responses. Comparisons between the characteristics of the students responding to those non-responding showed that they were very similar with regard to age, ethnic classification, high school performance, ACT scores. Survey results are believed to be representative of the perceptions of the entire freshman sample.

Variables included in the study are as follows:

Persistence: continued enrollment in the university after the quarter in which data were collected.

Satisfaction: an evaluation of overall experience at the institution is measured on a Likert scale of 7.

Academic integration: measured on a Likert scale as represented in the following items. Summing the scores of respondents' rating of each scale.

- The extent to which the courses prepared you for more advanced courses (1 very poor 2.poor 3.fair 4. good 5. very good 6.excellent 7. not applicable).
- The extent to which courses examinations were fair and appropriate (1 very poor 2.poor 3.fair 4. good 5. very good 6.excellent 7. not applicable).

- My advisor is interested in me as a person (1.strongly disagree 2.disagree 3 neutral 4 agree 5 strongly agree 6 not applicable).
- My advisor is a good listener (1.strongly disagree 2.disagree 3 neutral 4 agree 5 strongly agree 6 not applicable).
- My advisor is familiar with university course and programs (1.strongly disagree 2.disagree 3 neutral 4 agree 5 strongly agree 6 not applicable).
- My advisor provides me with accurate information (1.strongly disagree 2.disagree 3 neutral 4 agree 5 strongly agree 6 not applicable).
- My advisor helps me explore my fields of interest (1.strongly disagree 2.disagree 3 neutral 4 agree 5 strongly agree 6 not applicable).
- My advisor can be depended upon to keep appointments (1.strongly disagree 2.disagree 3 neutral 4 agree 5 strongly agree 6 not applicable)
- My advisor is available for appointments (1.strongly disagree 2.disagree 3 neutral 4 agree 5 strongly agree 6 not applicable).
- My advisor refers me to other university sources when appropriate. (1.strongly disagree 2.disagree 3 neutral 4 agree 5 strongly agree 6 not applicable).
- My advisor encourages me to take an active role in my education (1.strongly disagree 2.disagree 3 neutral 4 agree 5 strongly agree 6 not applicable).
- My advisor is familiar with my educational background (1.strongly disagree 2.disagree 3 neutral 4 agree 5 strongly agree 6 not applicable).
- My advisor encourages me to discuss my experiences and myself (1.strongly disagree 2.disagree 3 neutral 4 agree 5 strongly agree 6 not applicable).

- My advisor is someone whom I would recommend to other students (1.strongly disagree 2.disagree 3 neutral 4 agree 5 strongly agree 6 not applicable).
- My advisor has helped me develop a long-term plan to complete my degree (1.strongly disagree 2.disagree 3 neutral 4 agree 5 strongly agree 6 not applicable).

Social integration: summing the scores across respondents rating of each scale as listed below.

- Extra-curricular activities at the university were a valuable part of my experience here (1 strongly disagree 2 disagree 3 neutral 4 agree 5 strongly agree 6 no applicable).
- I found the campus to be a friendly place (1 strongly disagree 2 disagree 3 neutral 4 agree 5 strongly agree 6 no applicable).
- Most of my instructors were sensitive to my background and individual needs (1 strongly disagree 2 disagree 3 neutral 4 agree 5 strongly agree 6 no applicable).
- While at the University, I met students from many different backgrounds (1 strongly disagree 2 disagree 3 neutral 4 agree 5 strongly agree 6 no applicable).
- The staff in University offices was generally helpful (1 strongly disagree 2 disagree 3 neutral 4 agree 5 strongly agree 6 no applicable).
- The availability of athletic programs on campus was an important part of my college experience (1 strongly disagree 2 disagree 3 neutral 4 agree 5 strongly agree 6 no applicable).

- The opportunity to attend cultural events such as plays, concerts dance programs and art museum was an important part of my college experience (1 strongly disagree 2 disagree 3 neutral 4 agree 5 strongly agree 6 no applicable).
- I live in a residence hall which has provided me with an adequate environment for studying. (1 strongly disagree 2 disagree 3 neutral 4 agree 5 strongly agree 6 no applicable).

Academic performance: indicated by the grade point average.

Demographical variables :included gender, ethnicity and age.

- Being female, declaring a social science major and attending a religious private secondary school are more common among students who leave institutions of higher education than among students who persist in their education. Male students are more likely to persist even though they are dissatisfied with educational environment (Bean and Bradley, 1984). That gender difference has no impact on persistence has also been found in literature (Hilton, 1982). Significant differences in retention in high school were found among male and females. Furthermore, reasons associated with dropout are very different for male and female students. Women withdraw from school because of pregnancy, while men withdraw because they dislike school as a result of poor performance (U. S. Department of Education 1984). Interesting enough is the fact that this situation continues to be true in college environment. Women leave academic institutions primarily for family and social reasons while men leave primarily because of academic reasons (Alexander and Iceland 1974).

- Age has impact upon resistance. These findings are supported in Feldman (1993) and Grossets' studies (1989). Adult women are generally more satisfied than younger women students because they are more motivated and they regard college attendance is a privilege and obligation (Sturtz, 1971). Contrary evidence was cited that younger students tend to have higher retention because they have less family responsibilities than older students (Liu and Liu 1999).
- Ethnicity was generally found related to retention. Euro-American students tended to have higher retention than non-Euro-American students with the exception of Asian students. African-American and other non-Asian minority students attending predominately Euro-American colleges tend to have lower grade point averages and experience higher attrition rates than Euro-American students (Astin 1982). These results are derived from the interaction between the intellective and non-cognitive, contextual and social-cultural factors. Minority students are more likely than Euro-American students to view the "White" campus as alienating. Smedley (1993) has shown that minority student status can confer an additional burden of stress. This additional burden of stress is linked to an increased risk for negative outcomes beyond those that are attributable to the "normal" stresses of being a student at a highly competitive academic institution.

Methodology

There were two major procedures in analyzing the data. In the first step, regression analysis was used to analyze the impact of the variables of gender, academic

performance, academic integration, social integration, ethnicity, and age upon the dependent variable of satisfaction. In the second step, all the variables used in the first step were entered into the probit regression equation to evaluate the impact of those variables upon retention.

Statistically speaking, the choice of appropriate statistics has long been a topic of discussion among researchers. Research in the measurement of ordinal and nominal variables in the field of sociology and social statistics has made unparalleled development in the application of software. Increased accessibility to computers has made structural equations, probit regression as easy to use as the traditional regression analysis. Easy to use software, however, does not entail any easy explanations for the statistical results. In fact, the results of probit regression are far more difficult to visualize. Dey and Astin argued that despite mathematical reasoning indicating that probit and logistic regressions are far superior in alleviating the problem of multicollinearity and random error distributions, in practical application, traditional regression has shown no different results form either probit or logistic regression when the sample attributes are normally distributed (1993). The distributions of the sample attributes such as age and ethnicity were skewedly distributed; thus, it was decided to use probit regression to analyze the data in the second stage of analysis. The trade off is not serious. The interpretation of the slope in the logit regression is controversial because the effect of increasing independent variables by a unit is determined by the location of the starting point on the scale of the independent variable. Since the intent of the study is to verify the overall fit of the model and not the specific effect of the independent variable, probit regression was chosen to analyze the retention data.

Findings and Results

Multiple regression was used to analyze the satisfaction data. This data related the variables of gender, ethnicity, age, social and academic integration, academic performance to the variable of satisfaction (Table 2). The current study found that neither gender nor ethnicity seem to be related to student satisfaction. Ethnicity had been found to be significant in influencing students' satisfaction (Eimers and Pike 1997) but in the present study, minority students did not show any greater proclivity for being dissatisfied with the environment than the European students did. Gender differences in satisfaction with the college experiences have been documented by Pike (1994). He cited that the relationship between work satisfaction and satisfaction with college differed by gender. Women indicated that they were more satisfied with their opportunities for promotion and advancement than men, yet they were less satisfied with college experiences. The current study, however, did not substantiate any of these previous findings. Similar findings to this study have also been reported in higher education literature. Neither gender nor race played a role in affecting student satisfaction (Knox, Lindsay and Kolb 1992) That age was found negatively related to learning has been documented as a dispositional barrier to adult learners. (Cross 1981) However, our data indicated that age had no impact upon the students' satisfaction.

Academic integration, social integration and academic performances all have positive influences upon student satisfaction. In light of the beta weights shown in table 2, one finds that social integration is the most important variable in influencing

satisfaction, followed by academic performance and academic integration. Profuse literature in higher education has shown the importance of college environment upon students (Feldman 1973). Both social and academic adjustment leads to satisfaction in which Pearson correlations have evidenced the interrelationship among these variables (see Table 4). Grades affected not only satisfaction but also academic integration. This is consistent with literature reviewed. (Knox, Lindsay, and Kolb 1992) One interesting finding here is that social integration was found to be significantly related to satisfaction, yet not related to academic performance. Ease of making friends and participation in extra-curricular activities are indexes of adjustment of social life on campus. They might be not related to the efforts spent in pursuits of educational attainment and hence the relationship between performance and social integration was nil.

A logistic regression was used in analyzing the second stage of the data analysis. The relationships between the variables of gender, ethnicity, academic integration, social integration, academic performance, satisfaction and retention were examined (Table 3). As was the case in the previous equation, the variables of gender, age and ethnicity failed to show any impact upon the variable of student retention. Minority students including Asian, Hispanic, Native American and African American whose likelihood of withdrawal did not differ from the European American students. Voorhees' study also had the similar conclusion that ethnicity is not related to retention. (1987) In the same study, Voorhee indicated that female students had better retention than male students. Feldman (1993) documents that gender is related to persistence. Their findings were not supported by the current study. Age was found to be a predictor of retention in Feldman's study and its relationship with retention was curvilinear. Students in the twenty and twenty-four

year age group were more likely to drop out than students in the nineteen and younger age group. Students in the twenty-five and older age group had higher retention than the nineteen and younger age group. The sample in the current study was too small to provide an accurate verification of the curvilinear relationship.

Academic integration, academic performance and satisfaction have all influenced student retention which is the essence of Tinto's theory. Social integration, however, failed to fit into Tinto's theoretical framework. Satisfaction with academic experience and satisfaction with course curriculum were two components of academic integration which were used by Cabrera and his associates in validating Tinto's theory, both of which were significantly related to the variable of intent to persist.(Cabrera, Nora, and Castaneda 1993). Social integration, which was measured by the scale of ease of meeting friends and developing personal relationship, was also highly related to academic integration and persistence. Their findings were generally consistent with this study with the exception of social integration. Measures of social integration and academic integration have been extensively studied and analyzed by Pascarella and Terenzini (1980, 1983). In their model, five factors were identified from the factor analysis, which included student peer interactions, faculty interaction with the students, goal commitment, faculty concerns for teaching and student intellectual development. The only substantial difference between the finding in this study and theirs lies in the impact of social integration upon retention; variables of academic integration, academic performance and satisfaction have been verified in the current study as predictors of student retention as they were in Pascarella and Terezinis' research. Adapted from the scales from the Pascarell and Terenzini instrument, Grosset found that integration scales

measured by cognitive progress of students and the quality of out-of-classroom involvement were significant related to persisters (1991). This finding mirrored the research effort in this study.

Discussion

In general, Tinto's theory is partially validated. Satisfaction, academic performance and academic integration have all contributed to student persistence. Once again, social integration has failed to be significant in the student's decision to stay. Various scenarios can be cited to illustrate the findings, yet many of them will be hard to prove in the study. When social integration is defined in terms of absence of estrangement and alienation, it is believed that social integration is positively associated with persistence. A student will withdraw when he believes that he lives in an alienating or even a hostile environment. However, when social integration is defined in terms of the frequencies of social interaction with peers, friends or social activities, the relationship between persistence and social integration is not necessarily positive. Too much involvement in social activities will distract a student from studying. Consequently he may either withdraw voluntarily for lack of interest in course work or withdraw because of poor academic performance. This line of reasoning has been partially proven in that the simple correlation between social integration and academic performance is almost nil (r=-.059). In other words, social integration has no effect upon academic performance and persistence when measuring them linearly. The exact mathematical form of this relationship, if there is any, needs further study and analysis.

As many of the empirical studies have shown, social integration has no influence upon the outcome of withdrawal, especially in the community college setting, one might want to go back to the original concept of solidarity for theoretical reference. When Tinto speaks of integration within the social system of an institution, integration means an absence of isolation. (Tinto, 1987) In his lucid analysis of retention, Tinto chooses the concept of integration instead of solidarity developed by Durkheim to expound the process of student withdrawal. Academic integration and social integration are the two concepts derived from the original concept of solidarity. If one adheres to this original concept by Durkheim, the differences between social integration and academic integration simply vanish. According to Merton, when a person experiences isolation, he no longer accepts the goal of the social system. The alternative for him is to retreat into himself and isolate himself. In the setting of higher education, it means a student withdraws when he faces discrimination and isolation. Marx indicated that the individual realizes himself through work, and when he no longer experiences his work as something satisfying he becomes alienated and isolated. An analogy in higher education would mean that a student feels alienated when he is incapable of performing or he feels that his academic performance is not relevant in any meaningful sense. Therefore, one could say that performance precedes alienation or satisfaction, which leads to withdrawal. In a higher education setting, grades influence (academic) integration and satisfaction, which ultimately decides whether the student chooses to stay or leave. If this line of reasoning is correct, then one will use integration to approximate the concept of solidarity, which includes primarily one dimension, that is, absence of alienation. Thus, the theory of

student retention would be integrated into a theory of alienation in which estrangement results in withdrawal.

Policy Implications

When the theory of student retention becomes a theory of alienation, its policy implications are evident. Alienation is a structural problem rather than an individual problem and thus, the institution of higher education as well as society in general are at least partially responsible for students' withdrawal. Institutions of higher education need to assume the responsibility of installing a meaningful retention program to prevent students from dropping out. In a broader context, student retention is a serious problem. Institutions of higher education are places where cultural relativism is touted as the paramount value. Diversity is not only tolerated but also encouraged. Thus, one would believe that if a student withdraws from college because of social or psychological mal-adjustment due to racial or gender problems, he or she might encounter even more severe problems after he or she drops out of college.

The theory of alienation is a sociological tradition. Acute analysis of alienation has been pointed to by Marcus as a structural problem of modern society. Society's totalitarian influence over the individual occurs through the use of possibilities of technology's manipulation over man, thereby creating a social control that is as subtle as it is effective (1971, Israel). He states that if individuals are constantly subjected to indoctrination by mass media, the freedom of speech is undermined. Modern man is a lonely man who is subjected to much social constraint. When the 487 page report

released by the Surgeon General indicating one in five Americans suffering from a mental disorder in any given year but two-thirds do not seek treatment because of shame and cost of care, the problem of estrangement finally commands people's attention (Satcher, 1999). Practical research should be channeled in this direction to see how may students voluntarily withdraw without seeking help because of shame or embarrassment or ignorance. In addition, whether the individual seeks treatment depends upon the social and economic status of the individual. Therefore, academic counseling becomes all the more important on campus when students are seeking help. The problem of alienation certainly demands more than traditional academic counseling and hence professional psychologist should reside on campus. Should medical insurance cover the costs? Or should the medical insurance be included as part of the financial aid package? These problems need to be pondered when the question of students' voluntary withdrawal is seriously considered.

Bibliography

Aitken, N .D. (1982). College student performance, satisfaction and retention. *Journal of Higher Education* 53(1): 32-50.

Alexander, K. and B. Eckland. (1974). Sex differences in the educational attainment process. *American Sociological Review* 39: 668-82.

Anderson, K. L. (1981). Post-high school experiences and college attrition. *Sociology of Education* 54: 1-15.

Astin, A. (1975). *Preventing Students From Dropping Out*. San Franscisco: Jossey-Bass.

Astin, A. (1982). *Minorities in Higher Education: Recent Trends, Current Prospects, and Recommendations*. San Francisco: Jossey-Bass.

Bean, J. P. (1979). *Path analysis: the development of a suitable methodology for the study of student attrition*. Paper Presented at the Meeting of the American Educational Research Association, San Francisco.

Bean, J. P. (1980). Dropouts and turnover: the synthesis and test of a causal model of student attrition. *Research in Higher Education* 12: 155-87.

Bean, J. P. and P. K. Bradley (1984). *Untangling the satisfaction-performance relationship for college students.* Paper Presented at the Meeting of American Education Research Association, New Orleans.

Beelick, D. B. (1973). Sources of student satisfaction and dissatisfaction. *The Journal of Educational Research* 67:19-28.

Cabrera , A.F., A. Nora and M. B. Castaneda. (1993). College persistence: Structural equations modeling test of an integrated model of student retention. *Journal of Higher Education* 64(2): 123-138.

Cross, K. P. (1981). *Adults as Learners*. San Francisco: Jossey-Bass.

Dey, E. L. and A. W. Astin. (1993). Statistical alternatives for studying college student retention: a comparative analysis of logit, probit and linear regression. Research in Higher Education. 34: 569-581.

Durkheim, E. (1952). *Suicide*. Translated by J.A. Spaulding and G. Simpson. Glencoe: The Free Press.

Eimers, M. T. and G. R. Pike. (1997). Minority and nonminority adjustment to college: differences or similarities? *Research in Higher Education*. 38(1): 77-97.

Feldman K.A. and T. M. Newcomb (1973) *The Impact of College upon Students*. San Francisco: Jossey-Bass.

Feldman, M. J. (1993). Factors associated with one-year retention in a community college. *Research in Higher Education* 34(4): 503-512.

Grosset, J. (1989). *A Conceptual Framework for Describing the Causes of Student Attrition*. ERIC Document Reproduction Service No. Ed 310 819.

Grosset, J. (1991). Patterns of integration, commitment, and student characteristics and retention among younger and older students. *Research in High Education* 32(2): 159-177.

Hannah, W. (1971). Personality differentials between lower division dropouts and stay-ins. *Journal of College Student Personnel* 12 (1): 16-19

Higgerson, M. L. (1985). Understanding why students voluntarily withdraw from college. *NASPA Journal* 22(3): 15-21.

Hilton, T. L. (1982). *Persistence in higher education* (College Board Report No.82-5) Princeton, NJ: Educational testing Service. (ERIC Document Reproduction No. Ed 227 737.)

Israel, J. (1971). *Alienation from Marx to Modern Sociology*. Boston: Allyn and Bacon 1971.

Johnson, N. T. (1987). Academic factors that affect transfer student persistence. *Journal of College Student Personnel* 28(4): 323-329.

Knox, W. , E. P. Lindsay, and M. N. Kolb (1992) Higher education, college characteristics and student experiences: long term effects on educational satisfaction and perceptions. *Journal of Higher Education* 63(30): 303-328.

Liu, R. and E. Liu. (1999). An application of Tinto's model at commuter campus. *Journal of Education* 38: 32-37.

Morstain, B. R. (1977). An analysis of students' satisfaction with their academic program. *Journal of Higher Education* XLVIII: 1-16.

Pascarella, E. T. and P.T. Terenzini. (1979). Interaction effects in Spady's and Tinto's Conceptual Model of College Dropout. *Sociology of Education* 52: 197-210.

Pascarella, E. T. and P. T. Terezini. (1980). Predicting freshman persistence and voluntary dropout decisions from a theoretical model. *Journal of Higher Education* 51: 60-75.

Pascarella, E. T. and P. T. Terenzini. (1983). Predicting voluntary freshman year persistence/ withdrawal behavior in a residential university: A path analytical validation of Tinto's model. *Journal of Educational Psychology* 75: 215-226.

Pincus, F. (1980). The false promise of community college: class conflict and vocational education. *Harvard Educational Review* 50: 332-61.

Pike G. R. (1994). The Relationship between Alumni Satisfaction and Work Experiences. *Research in Higher Education* 35(1): 105-123.

Satcher, D. (1999). .Mental Health: A Report of the Surgeon General. 13 Feb.2000. *<http://www.surgeongeneral.gov/library/mentalhealth/home.html>*.

Smedley, B. D. (1993). Minority-Status Stress and the College Adjustment of Ethnic Minority Freshmen. *Journal of Higher Education* 64: 434-451.

Stork, D. and P. D. Berger. (1978). Attrition in the liberal arts college of a major metropolitan university. *Research in Higher Education* 9(4): 281-289.

Sturtz, S. A. (1971). An analysis of age difference in college student satisfaction. *Journal of College Student Personnel* 12: 220-222.

Tinto, V. (1987). *Leaving College*. Chicago: The University of Chicago Press.

Tinto, V. (1975). Dropout from higher education: a theoretical synthesis of recent research. *Review of Educational Research* 45: 89-125.

Voorhees, R. A. (1987). Toward building models of community college persistence: A logit analysis. *Research in Higher Education* 26 (20): 115-129.

Waterman, A. S. and C. K. Waterman. (1972). Relationship between Freshman Ego Identity status and subsequent Academic Behavior: A Test of the Predicative of Marcia's Categorization System of Identity Status. *Developmental Psychology* 6: 179-180.

Table 1-- Descriptive Statistics for Variables Used in the Study

	N	Range	Minimum	Maximum	Mean	Std.Deviation
FY98ID	372	1	0	1	0.6855	0.4649
SOCINT	368	27	13	40	30.3098	5.0767
EHTNIC	372	1	0	1	0.9301	0.2533
ACADINT	351	67	10	77	53.8000	12.692
SEX	372	1	0	1	0.3414	0.4748
SAT	372	5	1	6	4.7124	1.2419
GPA	372	4	0	4	2.8710	0.7399
AGE	372	9	17	26	18.1500	0.6476
Valid N(Listwise)	350					

Table 2-- Regression Coefficients

	B	Std.Error	Beta	t	Sig.
(Constant)	-1.088	1.784		-0.610	0.542
ETHNIC	-2.47E-02	0.243	-0.005	-0.101	0.919
SOCINT	8.97E-02	0.012	0.364	7.327	0.000
ACADINT	1.343-E02	0.005	0.144	2.871	0.004
SEX	8.35E-02	0.124	0.032	0.675	0.500
GPA	0.441	0.081	0.262	5.458	0.000
AGE	4.98E-02	0.094	0.026	0.533	0.595

Dependable Variable:SAT

Total number of cases: 372 (Unweghted)
Number of selected cases: 372

Table 3-- Probit Analysis

Parameter Estimates(PROBIT model:(PROBIT(p))=Intercept+BX):

	Regression Coeff.	Standard Error	Coeff./S.E.
EHNIC	-0.15635	0.29814	-0.52442
SOCIN	-0.02647	0.01715	-1.54286
ACADINT	0.01512	0.00623	2.42772 **
SEX	0.24001	0.16150	1.48612
SAT	0.34403	0.06887	4.99516 ***
GPA	0.27106	0.11122	2.43708 **
AGE	-0.12794	0.11482	-1.11427

Intercept	Standard Error	Intercept/S.E.
0.33205	2.18964	0.15164

Pearson Goodness-of-Fit Chi Square=344.220 DF=342 P=.456

***p <.001, **p<.05
Data Information
350 unweighted cases accepted.
253 caes are in the control group.
MODEL information-- ONLY Normal sigmoid is requested.

Table 4--Correlations (Variables Used in the First Equation)

	ETHNIC	SEX	SAT	GPA	AGE	ACADINT	SOCINT
ETHNIC							
SEX	-0.025						
	0.631						
	372						
SAT	0.013	-0.007					
	0.804	0.897					
	372	372					
GPA	0.168	-0.098	0.237				
	0.001	0.060	0.000				
	372	372	372				
AGE	-0.164	0.069	0.037	-0.095			
	0.001	0.184	0.474	0.067			
	372	372	372	372			
ACADINT	0.079	-0.077	0.276	0.095	0.071		
	0.138	0.149	0.000	0.074	0.188		
	351	351	352	351	351		
SOCINT	-0.071	0.027	0.401	-0.059	0.088	0.314	
	0.176	0.599	0.000	0.256	0.093	0.000	
	368	368	368	368	368	350	